Abstract

An image processing apparatus (200) for a charge coupled device including analog front end circuitry having optical black and offset correction, whereby the offset and optical black correction circuit is programmable. The present invention includes a first circuit (202, 204, 206, 208, 210) to sample the incoming optical black signal output from a CCD. This first circuit includes a correlated double sampler (202) coupled to a first programmable gain amplifier (204). An adder (206) connects between the first programmable gain amplifier (204) and a second gain amplifier (208) for adding in the optical black offset to the optical black signal input from the CCD. A second circuit (212, 214) includes a reverse programmable gain amplifier (212) connected to the output of the second programmable gain amplifier (208) to amplify the optical black level inversely proportional to the gain from the second programmable gain amplifier (208). The second circuit (212, 214) also includes an integrator (214) coupled to the reverse programmable gain amplifier (212) to integrate the difference between the incoming signal and the desired optical black value. The second circuit (212, 214) couples to the adder (206) to add the positive and negative difference to the optical black signal. An analog-to-digital converter (210) converts the sampled signal for further processing at the output of the image processing apparatus (200).